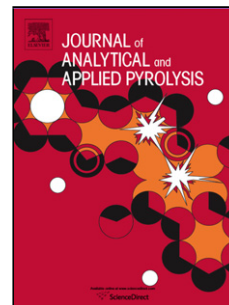


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Chemical Recycling of Crosslinked Poly(Methyl Methacrylate) and Characterization of Polymers Produced with the Recycled Monomer

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Highlights

- The chemical recycling of crosslinked PMMA wastes was investigated;
- PMMA could be depolymerized by pyrolysis in lab and pilot plant installations;
- PMMA powders could be produced efficiently from recovered MMA.

The chemical recycling of crosslinked poly(methyl methacrylate) wastes, PMMA, used as dental resins, was investigated for recovery and polymerization of the methyl methacrylate monomer, MMA. At temperatures of 400 °C in laboratory and pilot plant installations, PMMA could be depolymerized by pyrolysis to produce more than 90 wt% of liquid, containing more than 98 wt% of MMA. Gas chromatography (GC) and coupled gas chromatography – mass spectrometry (GC-MS) analyses were carried out to characterize the obtained liquid fraction. PMMA powders produced with different quantities of recycled MMA were prepared, after purification of the liquid through distillation, leading to polymer resins with properties that were similar to the ones obtained with virgin commercial MMA, as characterized by particle size, Fourier

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